

High Molecular Weight Components from Coffee Beverages – Degradation by Human Intestinal Bacteria

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SUMMARY

Polysaccharides, proteins and melanoidins make up at least 30% of the dry matter of coffee beverages, but little is known about their physiological effects. In this study the fermentability of high molecular weight fractions obtained from filter coffee beverages (*C. arabica*, light, medium and dark roasted) by human intestinal bacteria was investigated. Within 24 h of fermentation polysaccharides were extensively degraded (75-90%) and short chain fatty acids were produced in molar ratios of about 6:3:1 for acetate, propionate and butyrate, respectively. Whereas galactomannans were fermented rapidly, arabinogalactans were degraded at a slower rate. The rate of arabinogalactan fermentation varied for fractions differing in the range of molecular weight. Structural changes of polysaccharides in the course of fermentation were analyzed by methylation analysis. A faster decrease in (1→3)-linked galactosyl residues than in (1→6)-linked galactosyl residues accompanied by debranching the galactan backbone was shown. (1→5)-Linked arabinosyl residues were the least degradable structural units of arabinogalactans. From a decrease in brown color during fermentation it is assumed that melanoidins were also degraded or modified by human intestinal bacteria.